Stoller
Hanford Office

DOE-EM/GJ1024-2005

299-E26-61 (A6654)
Log Data Report

Borehole Information:

Borehole:	299-E26-61 (A6654)		Site:	216-A-24 Crib	
Coordinates (WA St Plane)		GWL[1] (ft) :	None	GWL Date:	09/13/05
North (m)	East (m)	Drill Date	Ground Level Elevation	Total Depth (ft)	Type
136375.7	575738.007	08/83	649.74	50	Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded steel	1.85	6 5/8	6 1/8	1/4	1.85	50

Borehole Notes:

The logging engineer measured the casing diameter using a caliper and steel tape. Logging data acquisition is referenced to the top of casing.

Spectral Gamma Logging System (SGLS) Equipment Information:

Logging System:	Gamma 1E		Type:	SGLS (70%) SN: 34TP40587A
Effective Calibration Date:	03/04/05	Calibration Reference:	DOE-EM/GJ864-2005	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

High Rate Logging System (HRLS) Equipment Information:

Logging System:	Gamma 1C		Type:	HRLS SN: 39-A314
Effective Calibration Date:	04/06/05	Calibration Reference:	DOE-EM/GJ865-2005	
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0	

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	1	2	3	4 Repeat	
Date	09/28/05	09/28/05	09/28/05	09/28/05	
Logging Engineer	Spatz	Spatz	Spatz	Spatz	
Start Depth (ft)	50.0	23.0	18.0	16.0	
Finish Depth (ft)	22.0	17.0	2.0	10.0	
Count Time (sec)	100	20	100	100	
Live/Real	R	R	R	R	
Shield (Y/N)	N	N	N	N	

Log Run	1	2	3	4 Repeat	
MSA Interval (ft)	1.0	1.0	1.0	1.0	
ft/min	N/A[2]	N/A	N/A	N/A	
Pre-Verification	AE117CAB	AE117CAB	AE117CAB	AE117CAB	
Start File	AE117000	AE117029	AE117036	AE117053	
Finish File	AE117028	AE117035	AE117052	AE117059	
Post-Verification	AE118CAA	AE118CAA	AE118CAA	AE118CAA	
Depth Return Error (in.)	N/A	N/A	0	0	
Comments	No fine-gain adjustment	No fine-gain adjustment	No fine-gain adjustment	No fine-gain adjustment	

High Rate Logging System (HRLS) Log Run Information:

Log Run	5	6 Repeat			
Date	10/04/05	10/04/05			
Logging Engineer	Spatz	Spatz			
Start Depth (ft)	26.0	23.0			
Finish Depth (ft)	17.0	21.0			
Count Time (sec)	300	300			
Live/Real	R	R			
Shield (Y/N)	N	N			
MSA Interval (ft)	1.0	0.5			
ft/min	N/A	N/A			
Pre-Verification	AC146CAB	AC146CAB			
Start File	AC146000	AC146010			
Finish File	AC146009	AC146014			
Post-Verification	AC146CAA	AC146CAA			
Depth Return Error (in.)	N/A	0			
Comments	No fine gain adjustment	No fine gain adjustment			

Logging Operation Notes:

Logging was conducted with a centralizer on each sonde. Measurements are referenced to the top of casing. Repeat sections were collected in this borehole to evaluate the logging systems' performance.

Analysis Notes:

Analyst:	Henwood	Date:	10/26/05	Reference:	GJO-HGLP 1.6.3, Rev. 0

Pre-run and post-run verifications for the logging systems were performed before and after data acquisition. Acceptance criteria were met.

A casing correction for 1/4-in.-thick casing was applied to the spectral log data (SGLS and HRLS).

SGLS and HRLS spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Concentrations were calculated with EXCEL worksheet templates identified as G1EMar05.xls for the SGLS and G1CApr05.xls for the HRLS using efficiency functions and corrections for casing, water, and dead time as determined from annual calibrations. Dead time corrections are applied where dead times exceed approximately 11 percent for both the SGLS and HRLS. Where SGLS dead time exceeds 50 percent, HRLS data are substituted. No correction for water was necessary.

Log Plot Notes:

Separate log plots are provided for the man-made radionuclide (^{137}Cs) detected in the borehole, naturally occurring radionuclides (^{40}K, ^{238}U, ^{232}Th [KUT]), a combination of man-made, KUT, total gamma, and dead time, and total gamma plotted with dead time. For each radionuclide, the energy value of the spectral peak used for quantification is indicated. Unless otherwise noted, all radionuclides are plotted in picocuries per gram (pCi/g). The open circles indicate the minimum detectable level (MDL) for each radionuclide. Error bars on each plot represent error associated with counting statistics only and do not include errors associated with the inverse efficiency function, dead time correction, casing corrections, or water corrections. Repeat log sections are also included where appropriate.

Results and Interpretations:

^{137}Cs was detected in this borehole between the ground surface and the bottom of the borehole (50 ft). The maximum concentration was measured at approximately 180,000 pCi/g at 22 ft in depth.

The repeat sections for the SGLS and HRLS indicate good agreement.

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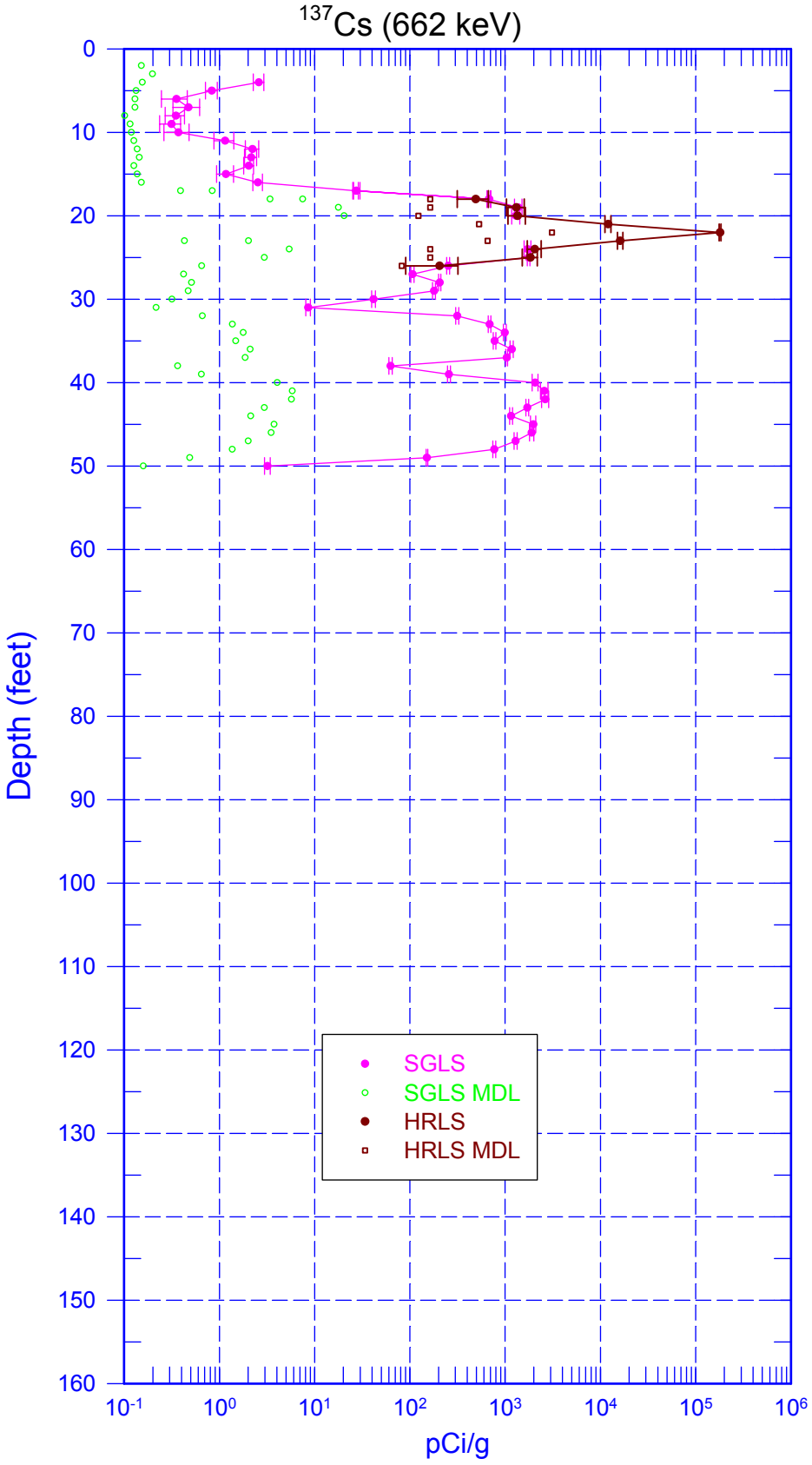
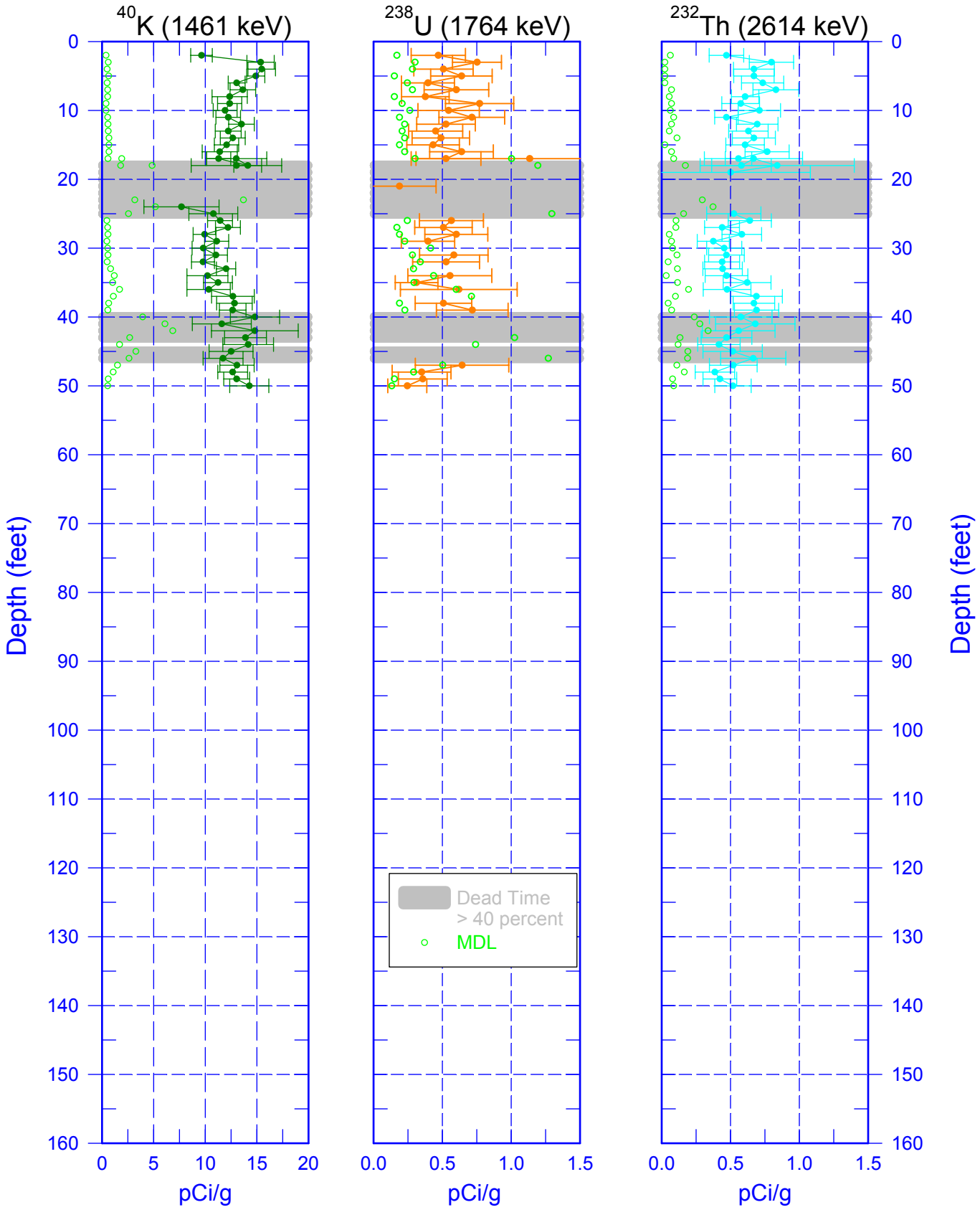
[1] GWL – groundwater level
[2] N/A – not applicable

299-E26-61 (A6654)
Man-Made Radionuclides



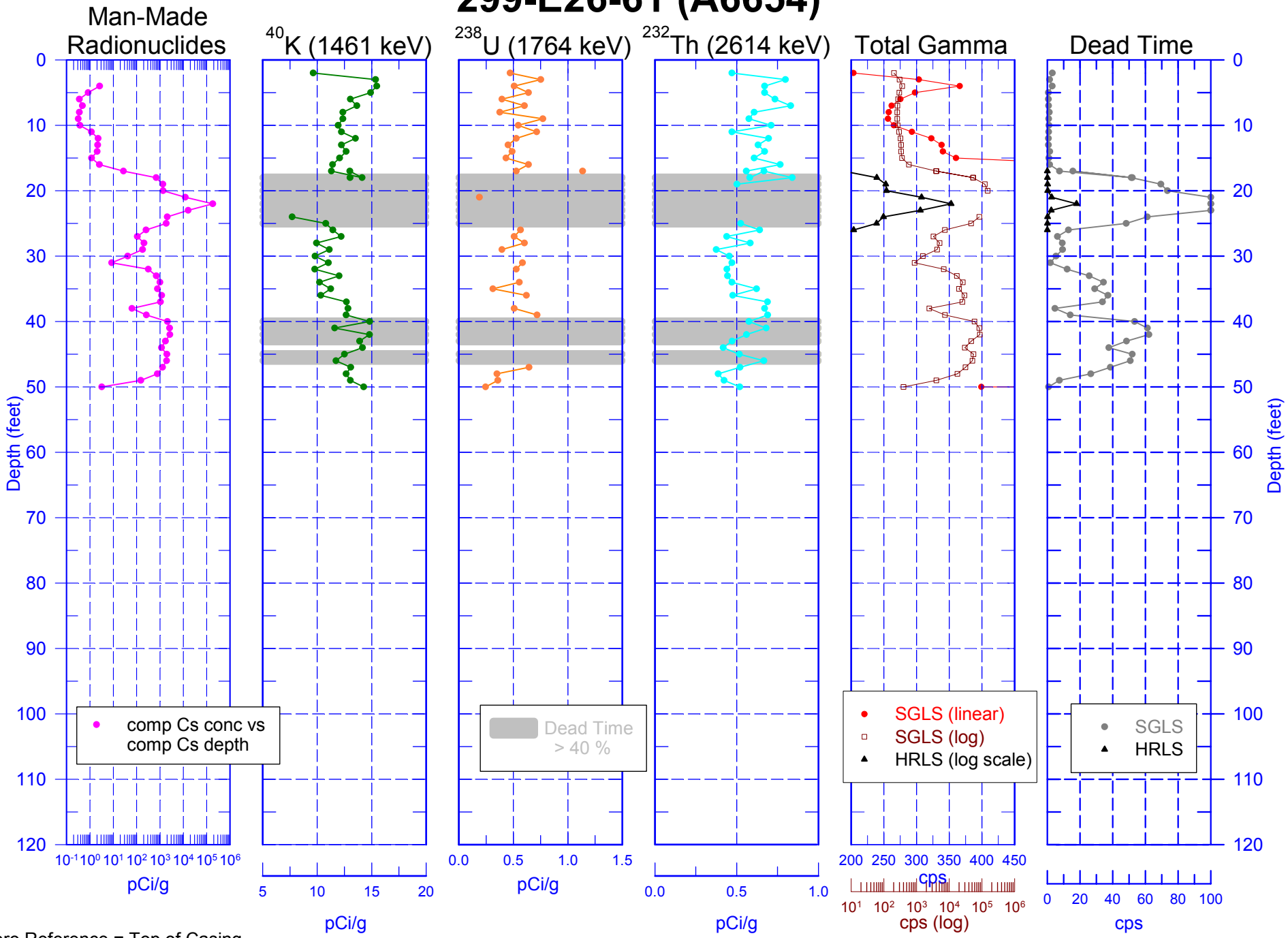
Zero Reference = Top of Casing

299-E26-61 (A6654)
Natural Gamma Logs



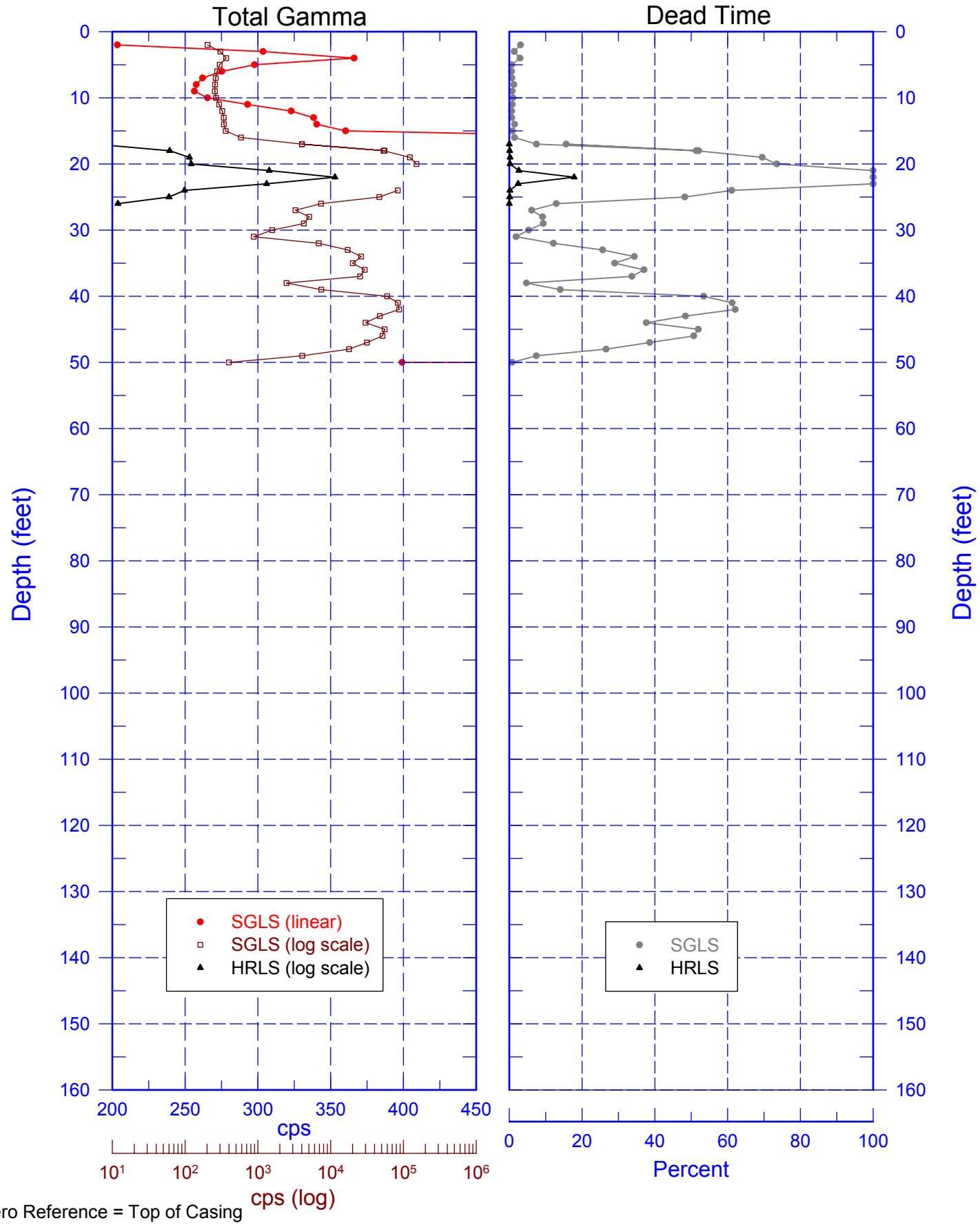
Zero Reference = Top of Casing

299-E26-61 (A6654)



Zero Reference = Top of Casing

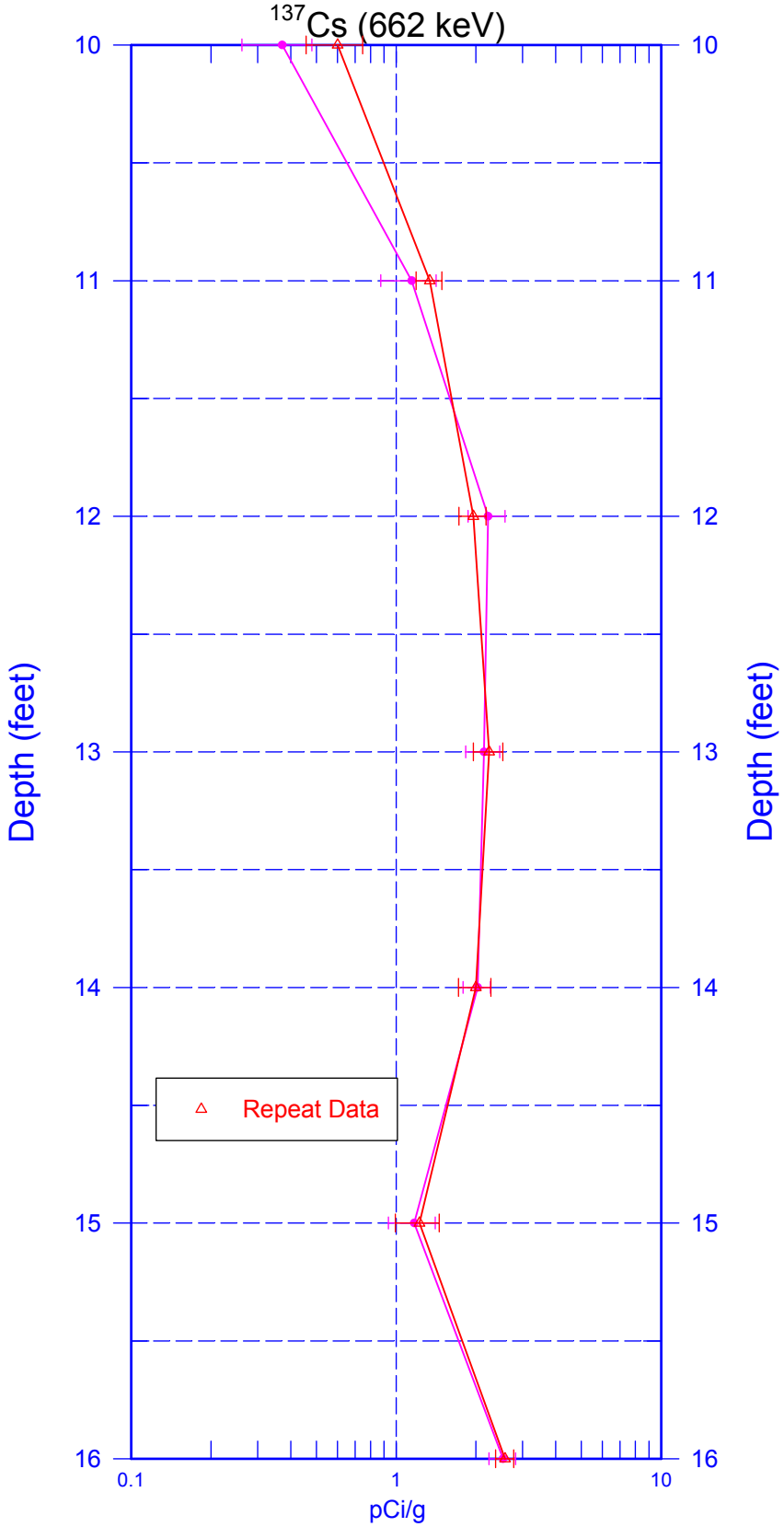
299-E26-61 (A6654)
Total Gamma & Dead Time



Zero Reference = Top of Casing

299-E26-61 (A6654)

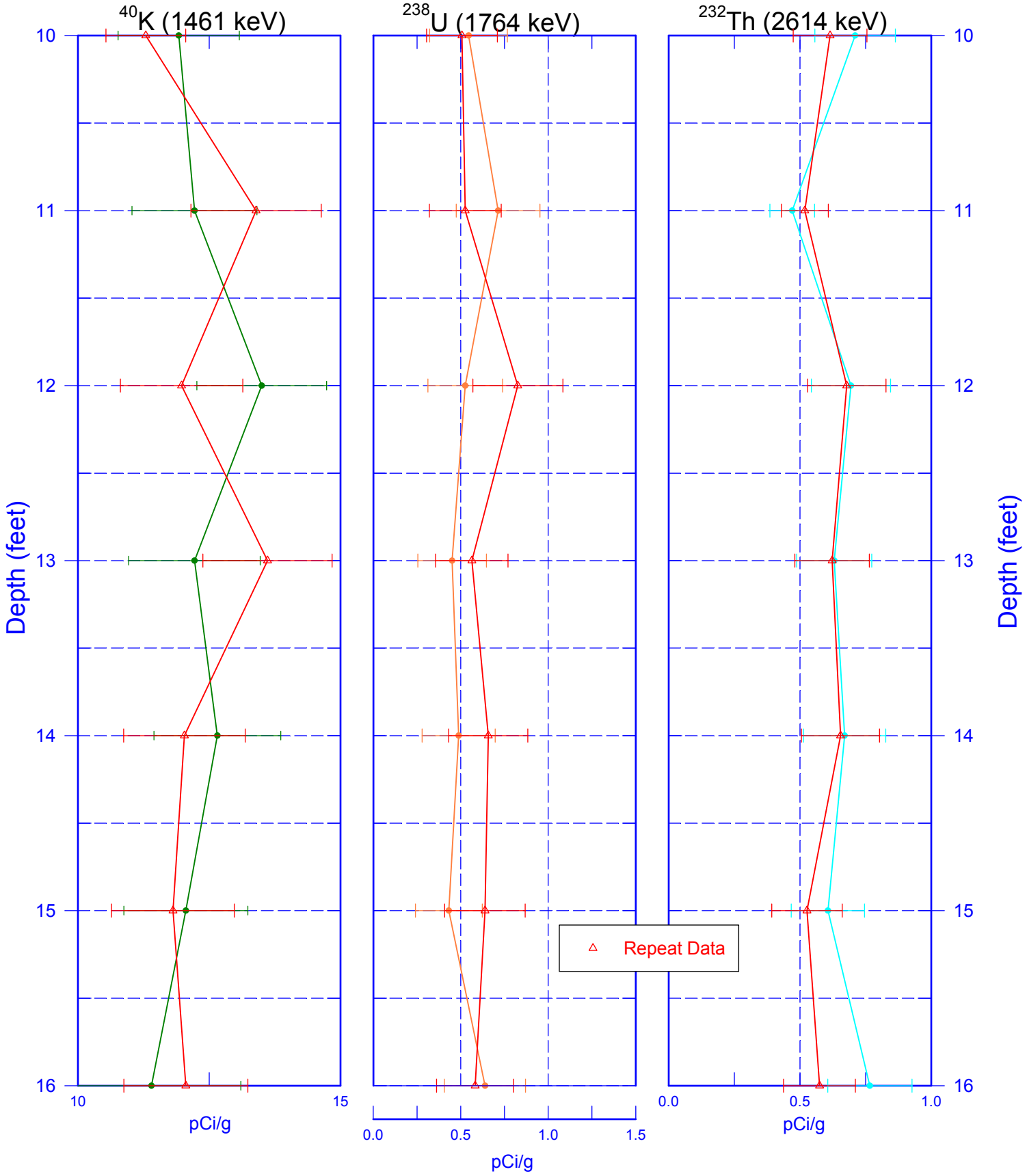
Repeat Section of Man-Made Radionuclides



Zero Reference = Top of Casing

299-E26-61 (A6654)

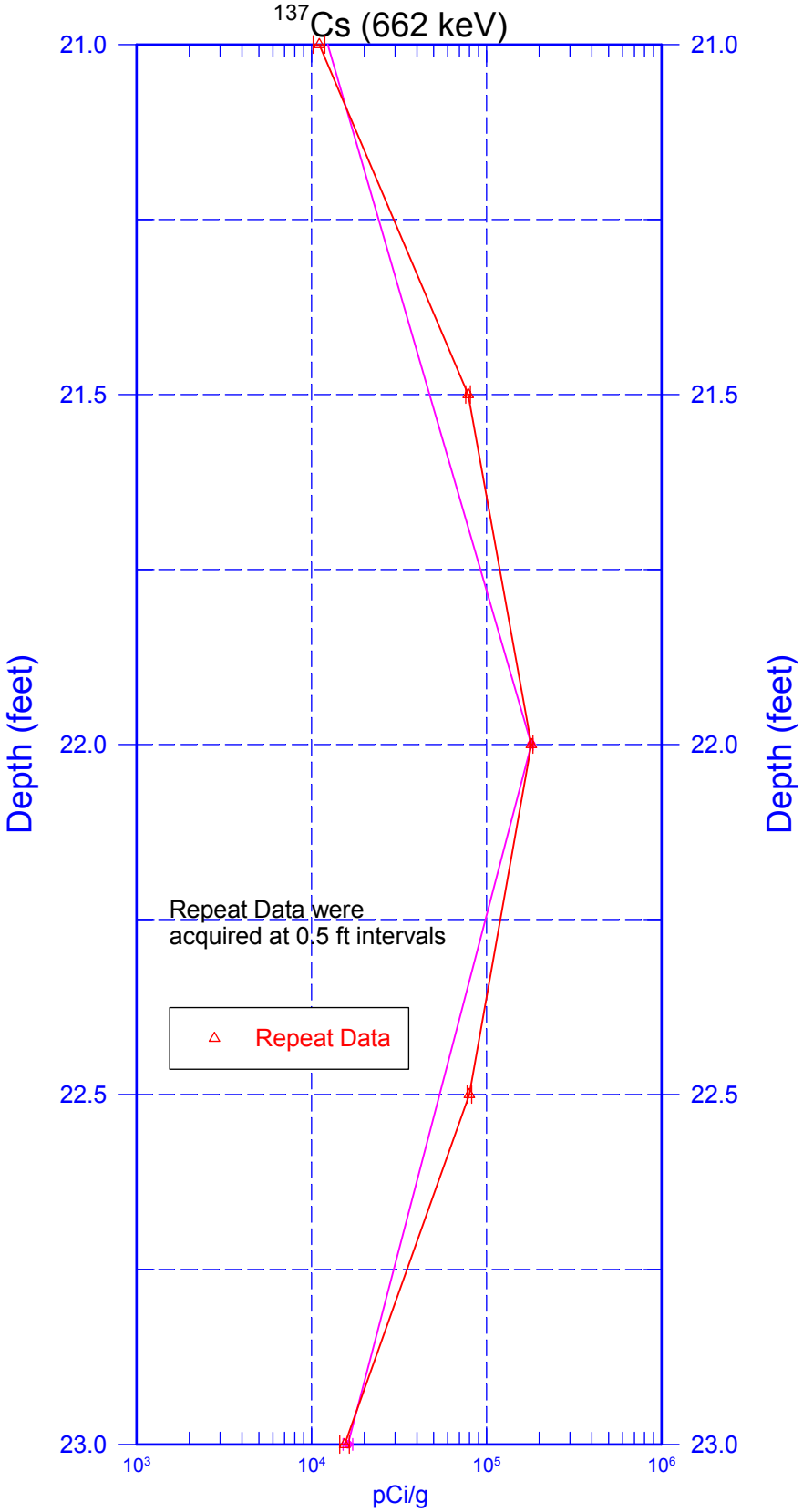
Repeat Section of Natural Gamma Logs



Zero Reference = Top of Casing

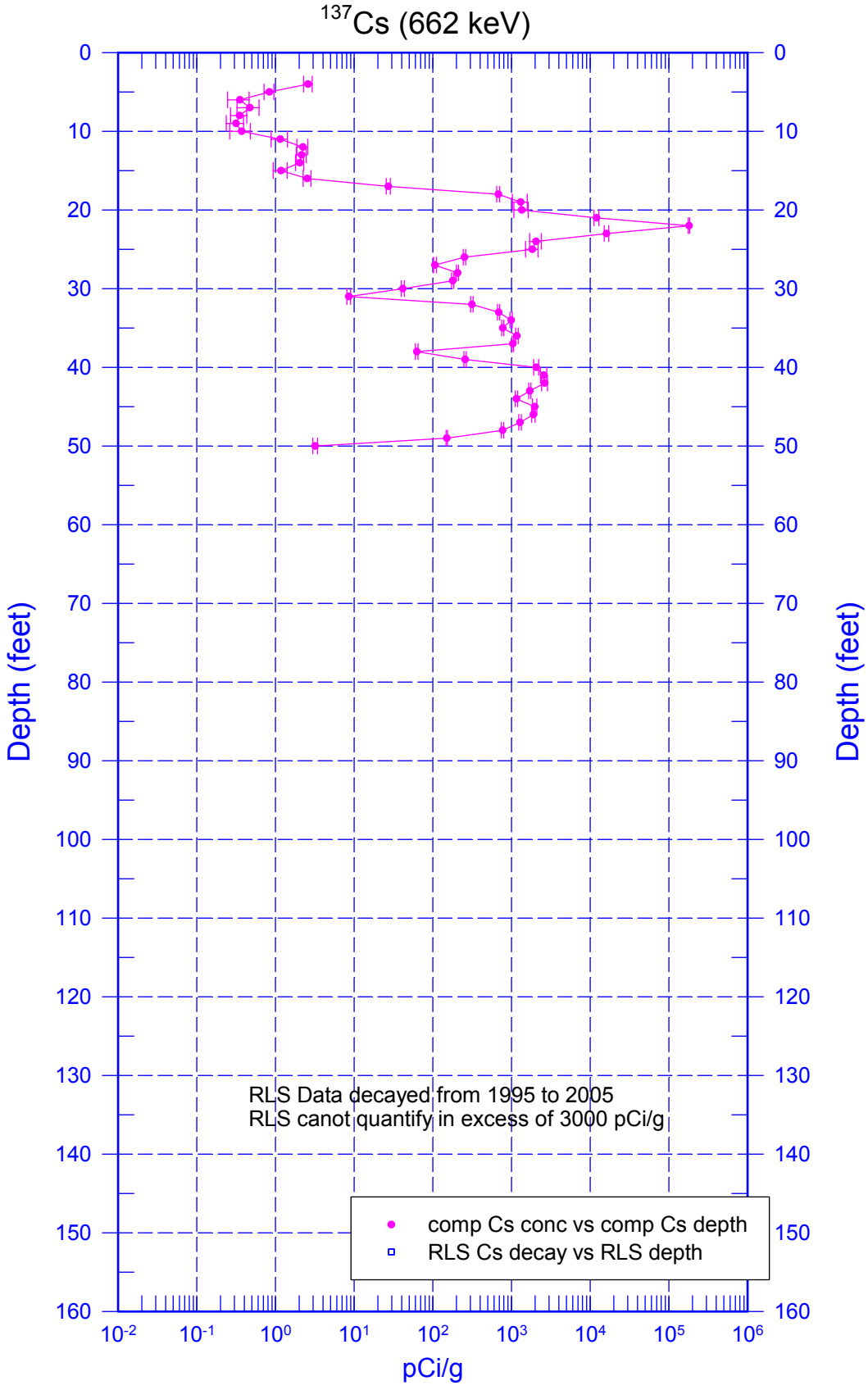
299-E26-61 (A6654)

Repeat Section of High Rate



Zero Reference = Top of Casing

299-E26-61 (A6654)
SGLS & RLS Comparison Plot



Zero Reference = Top of Casing